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Study of parameters to ensure quality control in histopathology reporting: A meta-analysis at a tertiary care center

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## Abstract

**Context :** When surgical pathology reports are dispatched to patients and clinicians, sometimes they are discovered to have errors, and it is a common practice for the pathologists to issue amended reports. Measuring the rate at which surgical pathology reports are amended can be used as a tool for assuring quality control in histopathology. **Aim :** The aim of this study was determine the parameters that can be used as an assessment tool to minimize errors in histopathology. **Materials and Methods :** This study was carried out at a major histopathology center. The duration of this study was from January 2001 through January 2011(ten years). Following parameters were looked for: Interpretational errors, permanent and frozen section correlation, intradepartmental consultation and cases sent for second opinion, cases brought in tissue committee meetings, audits, and cases discussed in hospital meetings. **Results :** A total of 28,1931 surgical pathology cases were signed out during the ten-year period. On these, addendums were issued on 5730 cases (2.0%). Additional report issued on 3521 (1.3%). Addendum/corrected report issued for 2209 cases, which was 0.7%, representing the true interpretational error. And out of this number, a second opinion was taken for 5980 cases, and 78 were sent abroad for second opinion. **Conclusion :** Review by a second pathologist is a strong tool to minimize errors in surgical pathology reporting. This may be done prior to or after the report is dispatched and the case is discussed in the hospital for treatment purposes. This analysis concludes that true interpretational error occurred only in 0.7% of cases, which is an attribute to the strong peer review in the department.

**Keywords:** Audit, histopathology, quality control

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## Introduction

Detecting and classifying errors in a surgical pathology practice is an important part of a comprehensive quality assurance program. There are number of tools to detect errors, including secondary review, examination of amended reports, correlation studies of frozen section, and final diagnosis. Error detection in histopathology is largely dependent on a second review of the case before or after the case is signed out. Secondary case review is inbuilt in some pathology practices and includes intradepartmental consultation, difficult cases conference, amended report review, random review of set percentage of cases, and permanent and frozen section correlation.<sup>[1]</sup> Case review also occurs in hospitals with patient centered conferences tumor boards, multidisciplinary team meetings, and clinicians queries. Errors detected by one of these mechanisms are referred to as discrepancy or difference in interpretation of reporting between two pathologists.<sup>[2]</sup>

## Materials and Methods

This study was carried out at a tertiary care cancer hospital from January 2001 through January 2011, for a ten-year period. Total number of cases signed out during this period were looked into and the number of cases of this this number were identified on which an additional or addendum report was issued. In addition to that, total number of frozen sections was taken into account, and number of discrepant frozen sections was also calculated. There were number of review mechanisms in the department including case review for multi disciplinary meetings, tissue committee audits, and peer review on clinical request. This total number was also considered to calculate the number of cases that were reviewed of the total number. Mechanism of clinical queries was recorded, either by clinician or by the patient.

## Results

A total of 28,1931 [\[Figure 1\]](#) cases were signed out during the ten-year period, of which, addendum report was issued on 5730 cases (2%). There was a change in primary diagnosis in 2209 cases (0.7%) and some additional information or correction of text was done in 3521 cases (1.3%). Of the 2209 cases, the false negative cases were 998 (0.35%) and false positive were (0.42%). [\[Figure 2\]](#)

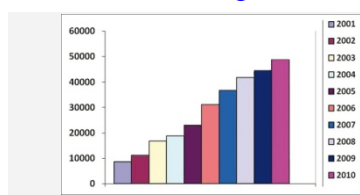


Figure 1: Total no. of cases in ten years showing year wise increase

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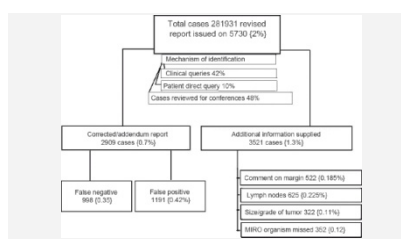


Figure 2: Flow chart showing breakup of cases

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The cases in which there was some missing information [Figure 2] was provided in the addendum report; these comprised 1821 of the total of these comments on margin was not given in 522 cases, the number of lymph nodes was increased by taking more sections and then added in addendum in 625 cases. Size or grade of tumor was missing in the initial report and the missing information was added in the supplementary report in 322 cases. There was a small number in which no comments on fungus, *H pylori* and amoebae was not made, and was added in the following report.

The mechanism of identification of error was either in the form of queries raised by the clinicians or directly by the patients. Majority of the errors were picked up by secondary review by a fellow pathologist when he or she was reviewing the cases for multidisciplinary meetings or departmental audits. [Figure 2]

## Discussion

The definition of error varies widely across the literature and identifying cases in surgical pathology that constitute an error remains a controversial issue. Rendering a diagnosis which does not represent true nature of disease or lack of disease in that patient is understood as an error. [3] Redundant sign out, blinded review, peer review or departmental audits are different names of second pathologist reviewing the cases. There are two schools of thought regarding secondary review of cases. Firstly, these cases should be reviewed within 48-72 hours of signing out the case so that if there is any error in the report it can be corrected immediately and an addendum report can be sent. [4] There is an alternative method that the case should be reviewed before it is signed out, the latter mechanism increases the sign out time by 2- 4 days.

The types of cases reviewed drastically impact error detection rates. If a random review methodology is selected, error detection rates are very low. Internationally accepted data reveals that secondary review reveals discrepancy rate of only little above 6.7%, and all these cases had mild to moderate affect on patient management. [5],[6] In other blinded studies, 96% of cases were in concordance between the primary and secondary pathologist. The number of cases selected for these kinds of studies was random selection 2-4 % of total volume. Majority of the centers report less than 50% of the cases being reviewed. This minimizes error rate to less than 0.26 %. [7],[8]

All the malignancies which are to be treated in the hospital are reviewed by a multidisciplinary team which comprises of a dedicated pathologist, who is dedicated to that particular specialty. In this regard, 35,724 of 28,1931 were reviewed, which comes up to 13%. A random review of 3% of the cases is done quarterly for intra departmental audit as an exercise for tissue committee meetings. Then, there has been a targeted review in response to

clinician's queries and patient requests, which is less than 1% of the total number. A small proportion of these cases have been sent abroad to experts in the field for second opinion after that an addendum report was issued. These comprise 0.025% of the total number.

Errors are not uncommon. If one looks at all diagnostic material, false-negative errors and missing the lesion completely appears to be the most common type of error. Some areas of surgical pathology have higher error rates than others. Until the work of Krieger and Naryshk [\[8\]](#), error rates of 1% and 2% for gynecologic cytology were reported commonly. [\[8\],\[9\]](#)

In our department, we have a very strong peer review system all the malignancies diagnosed are reviewed by a second pathologist before they are discussed in the multidisciplinary meetings. This increases the rate of pickup of errors. In comparison to the international data, we have seen a very effective quality assurance system which is attributed to a strong peer review, mainly in the form of review for internal conferences and internal audits. [\[10\]](#)

## Conclusion

In order to minimize error in surgical pathology, review by a second pathologist is the most important factor, may it be prior to signing out of report (it can be in the form of intra-departmental consult or peer review for an audit) or after the report has been dispatched to the patient, and the case is discussed in the hospital for treatment purposes. This analysis concludes that true interpretational error occurred only in 0.7% of cases, which is an attribute to the peer review in the department.

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